

BIOLOGICAL ASSESSMENT
Monongahela National Forest

LOWER CLOVER PROJECT AREA
ENVIRONMENTAL ASSESSMENT

CHEAT POTOMAC RANGER DISTRICT
Tucker County, West Virginia

September 2004

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EXECUTIVE SUMMARY

This Biological Assessment (BA) documents potential effects of implementation of the Proposed Action and other alternatives of the Lower Clover Timber Analysis on nine federally listed threatened and endangered (T&E) species that occur on the Monongahela National Forest (MNF).

Species identified for the MNF are shown in the attached “Likelihood of Occurrence” (LOO) table (Appendix A).

The primary focus for this BA is to document the effects of the Proposed Action on T&E species found on the MNF and determine if the project complies with requirements of Endangered Species Act (ESA) and Forest Service policy. This BA will determine whether the proposed action or alternatives are likely to: (1) affect proposed or federally listed species or designated critical habitat; (2) jeopardize the continued existence of species that are proposed for listing; or (3) adversely modify proposed critical habitat that may occur within the analysis area.

This BA documents the review of office records and field sites, and the analysis of the effects of implementing the Proposed Action and alternatives of the Lower Clover EA on endangered and threatened species. This biological assessment was written utilizing the results of botanical surveys, site checks to determine habitat type, and consulting existing threatened, endangered, and sensitive (TES) species records of the area.

Effects Determinations for Alternative B, the Proposed Action

Threatened, Endangered, and Proposed Species (MNF)

The following determinations of effects to threatened and endangered species due to implementation of the proposed action identified for Lower Clover project area have been made as a result of this Biological Assessment:

Bald eagle	<i>(Haliaeetus leucocephalus)</i>	No Effect
Cheat Mountain salamander	<i>(Plethodon nettingi nettingi)</i>	No Effect
Virginia big-eared bat	<i>(Corynorhinus townsendii virginianus)</i>	May Affect, Not Likely To Adversely Affect No Effect on designated critical habitat.
WV northern flying squirrel	<i>(Glaucomys sabrinus fuscus)</i>	No Effect
Running buffalo clover	<i>(Trifolium stoloniferum)</i>	May Affect, Not Likely To Adversely Affect
Shale barren rock cress	<i>(Arabis serotina)</i>	No Effect
Small-whorled pogonia	<i>(Isotria medeoloides)</i>	May Affect, Not Likely To Adversely Affect
Virginia spiraea	<i>(Spiraea virginiana)</i>	No Effect
Indiana bat	<i>(Myotis sodalis)</i>	May Affect, Likely To Adversely Affect; No

		<p>effects beyond those previously disclosed and addressed in the <i>Revised Biological Assessment</i> (USDA 2001) and <i>Biological Opinion</i> (USFWS 2002).</p> <p>No Effect on designated critical habitat.</p>
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The Monongahela National Forest requests concurrence from USFWS on determinations made for the bald eagle, Cheat Mountain salamander, VA big-eared bat, WV northern flying squirrel, running buffalo clover, shale barren rock cress, small-whorled pogonia and VA spiraea.

The Forest also requests initiation of formal consultation on the Indiana bat (as required under ESA) under the tiering process described in the *Biological Opinion* (Term and Condition #11) of the Threatened and Endangered Species Plan Amendment.

Currently there are no species proposed for listing or any proposed critical habitat identified for the Monongahela National Forest.

Introduction

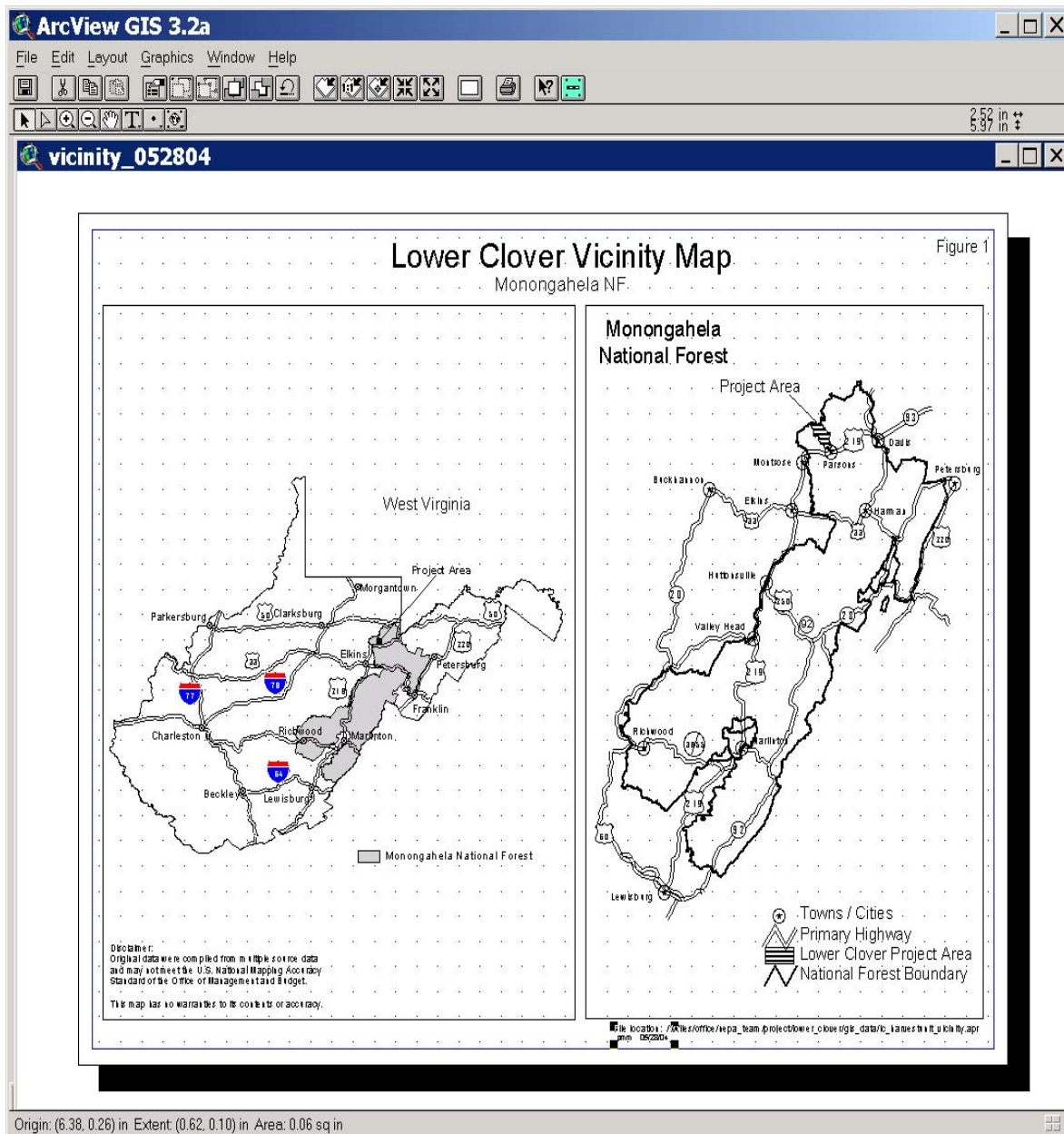
The Monongahela National Forest is conducting an Environmental Assessment (EA) for a proposed timber sale and associated management activities near Parsons, WV. The Lower Clover project area includes an estimated 5,226 acres of National Forest System lands (57%) and an estimated 3,939 acres of privately owned lands (43%), totaling 9,165 acres. National Forest lands form much of the east, west and south boundaries. Private lands are well distributed on the perimeter and mid-section of the project area. It is located approximately 5 miles north of Parsons in Tucker County.

The entire project area lies within Compartments 15, 19 and 20 on the Cheat/Potomac Ranger District. The Cheat River forms the northern and eastern boundaries, while Smoky Hollow, Mill Run and Left Fork Clover Run form the southern and western boundaries. Elevations range from 1,700' at Parsons to about 2,540' in the highlands above Jonathan Run to the north.

The landscape includes seeps and springs forming the numerous streams found within the project area. The West Virginia Division of Natural Resources (DNR) maintains several wildlife openings throughout the project area consisting of small clearings dominated by grasses and forbs with fruit trees planed throughout. A few small man-made waterholes are also located in the area.

The project area presently contains generally even-aged, closed-canopy forest over 60 years old with a wide mix of vegetative species. Lower Clover is nearly two-thirds mixed oaks (red, white and chestnut oaks, yellow poplar, sugar and red maple, basswood, beech, white ash and black cherry). Grapevines are present in some stands and no substantial disease or insect infestations within the area.

Figure 1. Project Area Map



Activities identified in the Proposed Action include the following: 380 acres of two-aged regeneration harvest and 109 acres of commercial thinning. In total, an estimated 489 acres would be harvested through commercial timber sales. Approximately 145 acres (of the 489) would be removed using ground-based skidding, and the remaining 344 acres would be removed using helicopter yarding. Pre and Post-harvest site preparation is also proposed to control competing vegetation, especially striped maple, beech and grapevines. Fencing and planting may also occur where needed to promote species diversity and reduce deer browse.

Road improvements, temporary road construction, and road abandonment projects are also proposed.

This biological assessment documents the review of office records, field sites, and the analysis of the effects of implementing the Proposed Action and alternatives on any threatened and endangered (T&E) species or their habitats found within the project area.

The determination discussions for threatened and endangered species are specific descriptions relative to procedures established in the Endangered Species Act (1973). A determination criterion is at a broader scale than the project area and is relative to species and/or their identified critical habitats. Determinations for these species are presented in the effects discussion.

Lower Clover T&E Species

To determine which T&E species could be affected by projects developed in the action alternatives, a ***“Likelihood of Occurrence”*** (LOO) table (**Appendix A**) specific to the Lower Clover area was completed. In this table, all MNF T&E species are listed along with their current federal/state ranking, habitat description requirements and known locations. Species habitat requirements were compared to existing project area habitat. Species information was collected from Forest T&E records, WV Natural Heritage Program records, research literature, field surveys, and personal communication with specialists to determine each species’ likelihood of occurrence in this project area.

Proposed Action and Range of Alternatives for Lower Clover Project Area

The Proposed Action is a set of activities developed with the purpose of moving the Lower Clover area towards the desired future conditions identified for Management Prescription 3.0 areas. The Forest Plan states that 3.0 areas should be managed for the production of large, high quality hardwood trees for lumber, hard mast, and scenic attributes. Habitat for wildlife species tolerant of disturbances such as white-tailed deer (*Odocoileus virginianus*), ruffed grouse (*Bonasa umbellus*), and gray squirrel (*Sciurus carolinensis*) are emphasized as well. A primarily motorized recreation environment is allowed, and considerable human activity is evident and expected to continue within the 5,226-acre Lower Clover project area.

Two alternatives were developed, along with the No Action (Existing Condition) alternative, to address issues identified. Alternative components comparing actions associated with each alternative are displayed in Table 1 below. Figure 1 shows the location of the Lower Clover project area. Please refer to the Lower Clover Project Area Environmental Assessment (EA) for complete descriptions of the alternatives. Chapters 1 and 2 of the EA, which describe the proposed action and alternatives, are available at http://www.fs.fed.us/r9/mnf/environmental/environmental_index.htm.

Table 1
Comparison of Alternatives for Lower Clover Project Area
(Acres of activities per alternative)

ACTIVITY	Alt A No Action	Alt B Proposed Action	Alt C
Two-aged regeneration harvest	0	380 acres	0
Commercial Thinning	0	109 acres	469 acres
Herbicide use	0	Up to 340 Acres	0
Site prep with hand tools	No	Yes	No
Planting	No	Yes	No
Fencing	No	Yes	No
Total Acres Cut	0	489 acres	469 acres
Estimated Total Volume	0	6317 CCF or 3.6 MMBF	2667 CCF or 1.6 MMBF
Potential helicopter landings	0	8	8
Road improvements on FR 767, FR 767B and FR 859	0	5 miles	5miles
Construction and reconstruction of temporary roads to C20/S17 and to possible landings off FR 767, WV 38, SR 21 and FR859	0	1 mile	1 mile
Road abandonment TR 125	0	0.5 mile	0.5 mile
Road Construction TR 125	0	0.5 mile	0.5 mile
Reconstruction of TR 125	0	1.0 mile	1.0 mile

THREATENED AND ENDANGERED SPECIES

CONSULTATION HISTORY

In March 2004, the Monongahela National Forest completed a Threatened and Endangered Species Amendment to the Monongahela National Forest Land and Resource Management Plan. This was driven by the fact that new information and issues concerning Threatened, Endangered and Proposed species that occur on the Forest had been compiled in project records and in the literature since 1986, when the *Forest Plan* was first approved. The EA for Threatened and Endangered Species Amendment to the Monongahela National Forest Land and Resource Management Plan and related documents can be viewed electronically at

the Monongahela National Forest's website:

http://www.fs.fed.us/r9/mnf/environmental/environmental_index.htm

As part of this Amendment process, comprehensive biological assessments pertaining to the nine federally listed species that occur on the MNF were completed. Results of these assessment are documented in the *Biological Evaluation* written for TE Amendment and in the *Revised Biological Assessment for Threatened and Endangered Species on the Monongahela National Forest, West Virginia, September 2001* completed for the MNF Land and Resource Management Plan prior to this Amendment.

During the course of the earlier assessment, the U.S. Fish and Wildlife Service (USFWS) recommended the development of new habitat identification and management guidelines to be adopted for the West Virginia northern flying squirrel. As an outcome of this collaborative effort, USFWS amended the Appalachian Northern Flying Squirrel's (*Glacomys sabrinus fuscus*) (*Glacomys sabrinus coloratus*) Recovery Plan (USFWS 1990) on September 6, 2001.

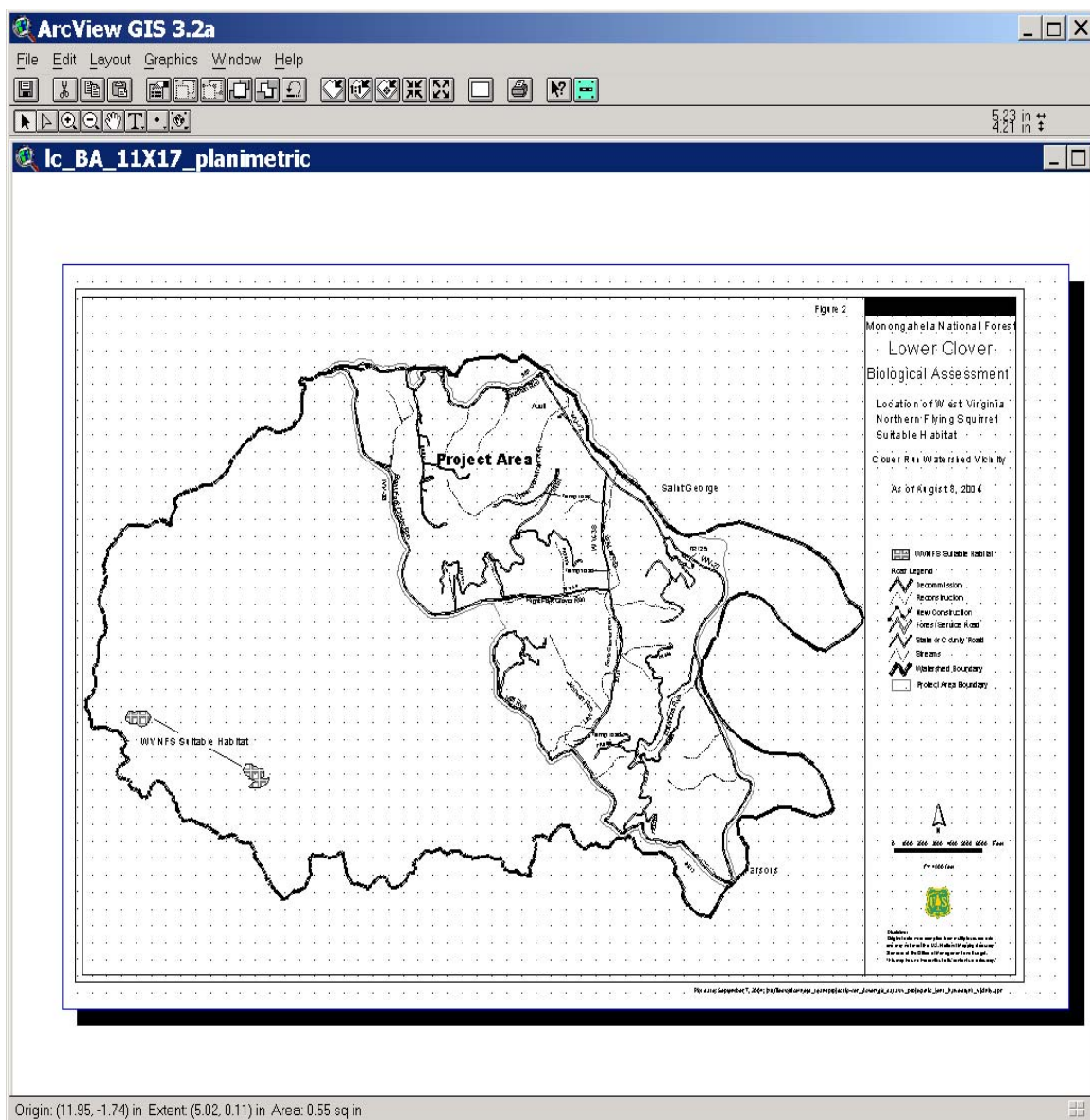
The Revised BA assessed this new information regarding these threatened and endangered species to evaluate the effects of ongoing management practices on national forest system lands of Monongahela National Forest, and the effects of anticipated management through implementation of the *Forest Plan*. The BA concluded that for all threatened and endangered species found on the MNF, with the exception of the Indiana bat, the continued implementation of the Forest Plan would result in a no effect or may affect, not likely to adversely affect to these species. The BA further concluded that continued implementation of the Forest Plan would result in a may affect, likely to adversely affect determination for the Indiana bat for all activities that involve tree cutting.

Upon completion, the Forest presented our Revised Biological Assessment to the US Fish and Wildlife Service for review, and requested formal consultation with the USFWS as required by the Endangered Species Act of 1973, as amended. USFWS concurred with the species determinations found in the Revised BA and no further Section 7 consultation pursuant to the ESA was required with the Service regarding those species with no effect or may affect, not likely to adversely affect determinations. The FS and USFWS entered into formal consultation for the Indiana bat on November 9, 2001 and the Service issued their final *Biological Opinion (BO) and Incidental Take Permit* on March 26, 2002. The Reasonable and Prudent Measures and Terms and Conditions identified in the BO have been considered in this BA and applied as appropriate to this project. Implementation of the terms and conditions associated with the reasonable and prudent measures provided by the USFWS will minimize direct adverse effects to the Indiana bat by maintaining suitable Indiana bat roosting and foraging habitat and protecting Indiana bats from the potential effects of timber harvest.

ANALYSIS OF EFFECTS- T&E SPECIES

Conclusions drawn from the LOO table dictate the level of analysis needed for each Threatened or Endangered species. In addition to the LOO table, the Forest's map of suitable habitat for the West Virginia northern flying squirrel was used to evaluate the potential for occurrence of that species in the project area. Figure 2 shows the Lower Clover project area and Clover Run watershed in relation to suitable habitat as mapped by the Forest. The nearest mapped suitable habitat is within the watershed, but approximately 2.75 miles west of the project area. The nearest potential habitat mapped by Menzel (2003) is about 3.5 miles south of the project area boundary and is not displayed in Figure 2.

Figure 2. Suitable WV Northern Flying Squirrel map



None of the projects within any alternative would affect the following listed species because these species are not found in the area and there is no critical or suitable habitat for these species: West Virginia northern flying squirrel, Bald eagle, Cheat Mountain salamander, Shale barren rock cress, and Virginia Spirea. Therefore any project activity within the Lower Clover analysis area will have either No Effect or May Affect, Not Likely to Adversely Affect determination on the aforementioned species. These species are not analyzed further.

Small whorled pogonia and Running buffalo clover have not been found within the analysis area or during botany surveys, but suitable habitat may be present for both species within the Lower Clover area. Therefore any project activity within the Lower Clover analysis area May Affect, Not Likely to Adversely Affect the aforementioned species.

Several proposed project units within Lower Clover fall within the area of influence for Virginia big-eared bats. Therefore any project activity within the Lower Clover analysis area May Affect, Not Likely to Adversely Affect Virginia big-eared bats or habitat.

Activities in all alternatives would fall outside specific areas of influence for Indiana bats. However activities outside the areas of influence May Affect, Likely to Adversely Affect Indiana bats or habitat.

SMALL WHORLED POGONIA

Small whorled pogonia is not known to occur within the analysis area or individual project units and was not found during extensive botany surveys completed in 2003 and 2004.

The small whorled pogonia prefers open, dry, deciduous woods with acidic soil. Soils within the Lower Clover area are primarily from the Hampshire series which have acidic characteristics present. Tree species commonly associated with this species include white oak (*Quercus alba*), white pine (*Pinus strobus*), flowering dogwood (*Cornus floridana*), and witch hazel (*Hamamelis virginiana*). All of the aforementioned tree species can be found within the Lower Clover analysis area.

Small whorled pogonia sites across its range share several common characteristics, including sparse to moderate ground cover in the microhabitat of the orchids (except when among ferns), a relatively open understory canopy, and a proximity to logging roads, streams, or other features that create persisting breaks in the forest canopy (Mehrhoff 1989). Shade may be an important habitat component. Small whorled pogonia has staggered emergence, depending upon the individual orchid's reproductive status, making survey work a challenge. Stems that form a flower bud usually emerge before vegetative plants. In WV (<2600 ft.), small whorled pogonia generally emerges in May and flowering occurs from June to early July (Concannon, pers. obs. 1998). An individual plant may stay in flower from four days to two weeks (USFWS 1992). Because of its broad habitat description, it is possible that Lower Clover provides suitable habitat for small whorled pogonia.

Although individuals may be present in the project area, given the scale and scope of the proposed activities and that surveys have failed to identify known occurrences, the probability of this is extremely low and therefore discountable.

Alternative A – No Action

With Alternative A, no new areas and/or potential habitat will be disturbed or thinned. Usual road maintenance, wildlife opening mowing, and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no direct, indirect, or cumulative effect on small whorled pogonia or suitable habitat.

Alternative B – Proposed Action

Two-aged regeneration harvests would create forest stands with two distinct age classes. One age class would be newly established and the older age class would be remnants from the original stand's overstory. In Lower Clover, clumps (1/3 acre or larger) would be retained from the original stand. Scattered overstory trees would remain, however most of the overstory would be removed to allow light to reach the forest floor.

Both conventional ground-based skidding and helicopter yarding will occur. About eight helicopter landings may be created which will involve vegetation removal and soil disturbance. Approximately 1.0 mile of temporary road will be constructed to move the timber off site. Once timber sale activity is complete, these temporary roads will be reseeded and blocked to motorized traffic.

With Alternative B, approximately 500 acres (489 through harvest, 6 acres of landings, 5 acres of road construction) are expected to be disturbed, all of which is potentially suitable habitat.

If any small-whorled pogonia is present, the direct effects of timber harvesting may include crushing individual plants with timber harvesting equipment. It is unknown whether this species needs disturbance, but it appears that canopy disturbance could be beneficial. The indirect effect on this species could be an increase in available habitat for dispersal relative to the existing condition. Thinning activities could increase habitat suitability by way of opening the understory canopy (USFS 2001). Heavy ground disturbing activities could decrease small whorled pogonia habitat suitability (USFS 2001). Cumulative effects from activities would be discountable.

Alternative C

This alternative includes 469 acres of commercial thinning using both conventional ground-based skidding and helicopter yarding. Log landing and road management activities would be the same as Alternative B.

With Alternative C, approximately 480 acres (469 through harvest, 6 acres of landings, 5 acres road construction) are expected to be disturbed, all of which is potentially suitable habitat.

Direct, indirect and cumulative effects would be similar to those identified for Alternative B.

Mitigation common to all Alternatives

In the event a small whorled pogonia is found, the mitigation identified in Chapter 2 of the EA related to consultation with USFWS is expected to avoid any adverse impacts to this plant.

Determination: Implementation of Alternative A will have “No Affect” on small whorled pogonia individuals or habitat within Lower Clover analysis area.

Implementation of Alternatives B, or C will have a “May effect, Not Likely to Adversely Effect” small whorled pogonia individuals or habitat within Lower Clover analysis area.

RUNNING BUFFALO CLOVER

Running buffalo clover is not known to occur within the analysis area or individual project units and was not found during extensive botany surveys completed in 2002 and 2003. Once widespread and commonly found along streams and bison trails, botanists now believe running buffalo clover is a savanna species dependent on slight disturbance for survival. Evidence indicates running buffalo clover responds favorably to light soil disturbance occurring during road construction, use, and abandonment (Madarish et.al 2002). Running buffalo clover is present on private land east of the analysis area. Although running buffalo clover has a high affinity for calcium-rich soil, which is not found within the Lower Clover area, it is possible that running buffalo clover may be present somewhere within the project area.

Although individuals may be present in the project area, given the scale and scope of the proposed activities and that surveys have failed to identify known occurrences, the probability of this is extremely low and therefore discountable.

Alternative A – No Action

With Alternative A, no areas and/or potential habitat will be disturbed or thinned. Usual road maintenance, wildlife opening mowing and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no direct, indirect or cumulative effect on Running buffalo clover or suitable habitat.

Alternative B – Proposed Action

With Alternative B, approximately 500 acres (489 through harvest, 6 acres of landings, 5 acres of road construction) are expected to be disturbed, all of which is potentially suitable habitat.

If any running buffalo clover is present, the direct effects of timber harvesting may include crushing individual plants with timber harvesting equipment. However, indirect effects of timber harvesting should benefit running buffalo clover. Limited timber harvest that results in less dense canopies and small openings that favor early successional species on a small scale may increase running buffalo clover habitat suitability. Running buffalo clover apparently needs slight disturbance to thrive, but the specific types and severity of needed

disturbance are not well understood. In 1994, Fernow Experimental Forest initiated a study on running buffalo clover. Results after seven years of monitoring indicate that two years following timber removal, previously declining running buffalo clover populations began to increase in density. Clover in areas with no ground disturbance increased in density the second growing season, but began to decline by the third season. The results of this study suggest that controlling the intensity of ground disturbance combined with a reduction in canopy density, such as that associated with uneven-aged harvests, may help sustain populations of running buffalo clovers (Madarish and Schuler 2002).

Some ground disturbing activities such as road reconstruction, ground skidding and logging decks could provide mechanical seed scarification and dispersal of seed (USDA FS 2001). Adversely, permanent roads with deep gravel and heavy road maintenance (blading) beyond light soil disturbance could decrease potential running buffalo clover habitat (USDA FS 2001).

Timber harvest activities have occurred and are currently occurring on both private and federal lands within the project area. It is reasonable to assume that harvest activities will continue to occur throughout the next planning period (10-15 years). Private timber harvests are expected to continue based upon WVDNR logging permit reports. Road use and new road construction is also planned on both FS and private lands. Other activities including gas pipeline development and maintenance, residential development, agricultural activities and recreational activities will also continue into the next planning period. Cumulatively, activities on federal lands will not lead to running buffalo clover population decreases. It is unknown if private activities in the future will affect running buffalo clover populations, however, if individuals are present on private lands, given the scale and scope of the current activities, cumulative affects will be minor and therefore discountable.

Alternative C

This alternative includes 469 acres of commercial thinning using both conventional ground-based skidding and helicopter yarding. Log landing and road management activities would be the same as Alternative B.

With Alternative C, approximately 480 acres (469 through harvest, 6 acres of landings, 5 acres of road construction) are expected to be disturbed, all of which is potentially suitable habitat.

Direct, indirect and cumulative effects would be similar to those identified for Alternative B.

Mitigation common to all Alternatives

In the event running buffalo clover is found, the mitigation identified in Chapter 2 of the EA related to consultation with USFWS is expected to avoid any adverse impacts to this plant.

Determination: Implementation of Alternative A will have “No Affect” to running buffalo clover individuals or habitat within Lower Clover analysis area.

Implementation of Alternatives B, or C “May effect, Not Likely to Adversely Effect”
running buffalo clover individuals or habitat within Lower Clover analysis area.

Virginia big-eared bat

The Virginia big-eared bat is a geographically isolated and sporadically distributed cave obligate species feeding predominantly on moths (Dalton et al. 1986, Sample and Whitmore 1993).

Hibernacula

Virginia big-eared bat begin to return to hibernacula in September, but continue feeding during warm evenings. By December, they hibernate in dense clusters on cave ceilings.

Hibernacula Habitat in and around the MNF and Lower Clover Area

Nine West Virginia caves are monitored as Virginia big-eared bat hibernacula. Three caves are found on the MNF and harbor approximately 7% of all Virginia big-eared bat in West Virginia during winter. Hibernacula caves, as well as 200-foot buffers around them, are considered as part of the areas of influence for Virginia big-eared bats. Hibernation sites will be managed under MP 8.0 and Zoological Area standards for Opportunity Area 837.

The closest hibernacula to the Lower Clover project area is Big Springs cave approximately 4 miles away. The most recent 2003 winter cave survey tallied two Virginia big-eared bats hibernating in Big Springs cave.

Direct, Indirect and Cumulative Effects to Hibernacula habitat

Because the Lower Clover project area is well outside the 200-foot buffer zone surrounding any known hibernacula, any activity proposed in Lower Clover project area would have no direct, indirect or cumulative effect on Big Springs cave or any bats occupying that cave. Winter hibernacula habitat for Virginia big-eared bats is not analyzed further.

Summer Female Maternity Colonies and Bachelor Habitat

Female maternity colonies generally utilize warm caves, though some may use cold caves. Nocturnal activities in maternity colonies vary as the maternity season progresses. During May and most of June, when females are pregnant, the colony remains outside the cave most of the night. After birth in late June and July, nightly emergent behavior of the mother depends on the needs of her young. Male Virginia big-eared bats also roost together in bachelor colonies although they inhabit different areas of the cave than the females (USFS 2001 and references therein).

Identified summer colonies, either maternity or bachelor sites, are included within the area of influence for Virginia big-eared bats. These areas will be managed under MP 8.0 and Zoological Area standards for Opportunity Area 837.

Identified Summer Maternity and Bachelor Habitat on the MNF and Lower Clover Area

Eleven caves in WV are monitored for summer Virginia big-eared bat use by WVDNR. Three of these are on MNF land. Big springs cave, located approximately 4 miles from the

southeast section of Lower Clover, is the closest known hibernacula but is not used by Virginia big-eared bats as a maternity or bachelor colony site. The closest maternity cave is located approximately 8 miles from Lower Clover area. Refer to Appendix A, LOO for cave distances for Virginia big-eared bats. There are no mine adits or abandoned buildings on federal property within Lower Clover project area that could be used as summer maternity or bachelor roosts.

Direct, Indirect and Cumulative Effects to Summer Maternity and Bachelor habitat

Any project activity within the Lower Clover analysis area will have no direct, indirect or cumulative effect on identified summer maternity colonies or bachelor habitat for Virginia big-eared bats because this habitat is not found in the Lower Clover project area. Summer colony or bachelor habitat for Virginia big-eared bats is not analyzed further.

Summer Foraging and Night Roosting Habitat

Observational research shows Virginia big-eared bat forage only after dark. Virginia big-eared bat forage near their caves. In general, distances from roosts to centers of foraging areas do not differ between males and females (Adam et al. 1994), though foraging area size for females may increase during the summer. The maximum distance a male bat has been found from its roost was 5.04 miles (8.4 km). Maximum distance a female was found from the maternity colony was 2.19 miles (3.65 km) (Adam et al 1994).

Foraging and roosting areas (6 miles in radius from hibernacula and summer colonies), are included within the area of influence for Virginia big-eared bats. There is not a specific management prescription or Opportunity area designation for roosting and foraging areas outside the 200' buffer around hibernacula/maternity sites for Virginia big-eared bats.

Summer Foraging in and around the MNF and Lower Clover Area

Based on information that Virginia big-eared bat travel up to 6 miles from their caves to forage (Stihler 1995), the area within this 6-mile radius would be considered Virginia big-eared bat forage habitat. Habitat within the 6-mile foraging radius surrounding the eleven monitored Virginia big-eared bat maternity/bachelor caves is very diverse. Seventy-six percent of the 559,486 acres is privately owned, and the majority is in agricultural use. Of the less than 25% that is National Forest, more than 95% is forested habitat over 60 years old.

Although Big springs cave serves as a Virginia big-eared bat hibernacula, it is not used during the summer as either a maternity site or bachelor colony site. Therefore Virginia big-eared bats leaving Big springs in the spring are moving to another cave location for the summer. It can be assumed that foraging activities around Big springs is limited to early spring when the bats are emerging from hibernation and fall when bats are returning to the cave for hibernation. This is further documented by the fact that summer mist netting surveys completed on the MNF in 1997 and 2003 within and around the Lower Clover analysis area did not capture any Virginia big-eared bats. In addition, summer mist net studies done by the Fernow Experimental forest around Big Springs cave in 2000, 2001, 2002 and 2003 did not captured any Virginia big-eared bats. The only confirmed presence has been the capture of a single male Virginia big-eared bat in October, 1995 by the

WVDNR, emphasizing use of the area for fall foraging prior to hibernation versus summer foraging. There are no mine adits or abandoned buildings on federal property within Lower Clover project area that could be used as day or night roosts.

Alternative A – No Action

With Alternative A, no areas and/or potential habitat within six miles of Big springs cave will be disturbed. Usual road maintenance, wildlife opening mowing and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no direct, indirect or cumulative effect on Virginia big-eared bat spring or summer foraging habitat.

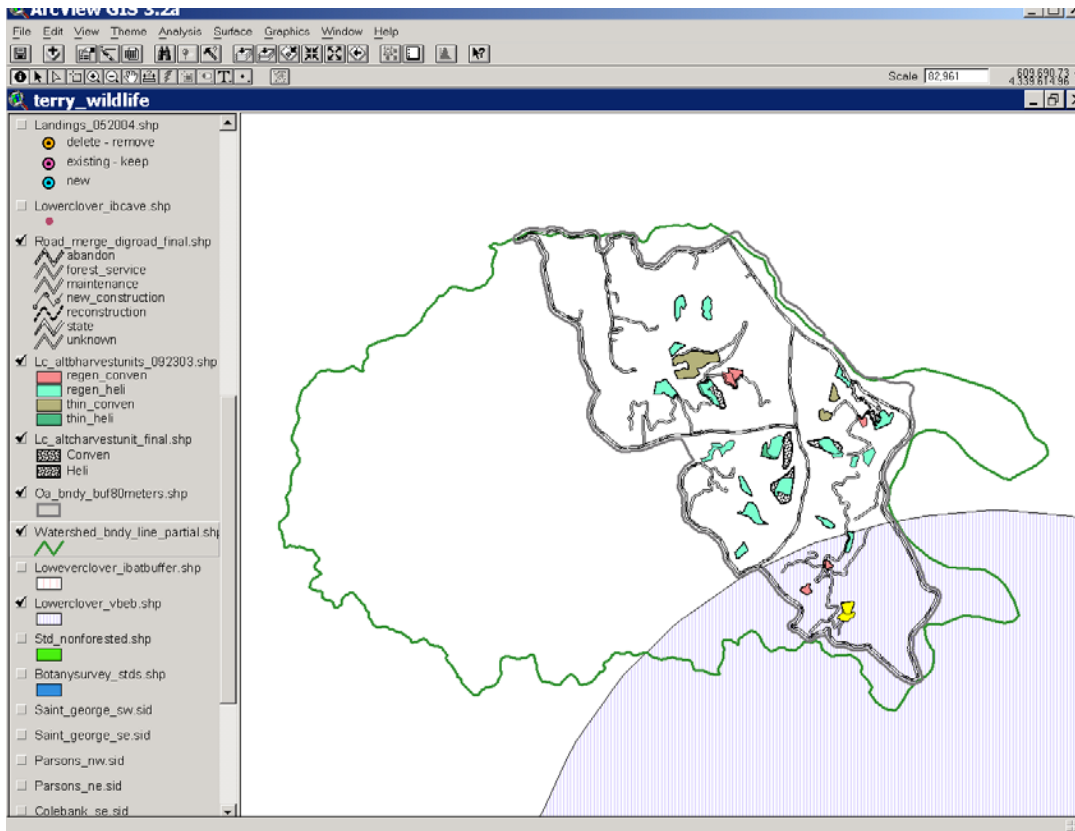
Alternative B – Proposed Action

Alternative B will involve 23 acres of regeneration harvest within the 6-mile radius Virginia big-eared bat foraging area surrounding Big springs cave. Virginia big-eared bats do not use Big springs cave during summer, however the bats that do hibernate move from Big springs to another location in the spring. It is possible that these bats may forage several nights prior to moving to their final summer destinations. However, they do not use trees for daytime roosting so there is no vulnerability of harm or potential for take from harvesting or other disturbances that could occur within the Lower Clover project area during spring or summer foraging. Additionally, because of the small acreage involved it is unlikely that any contribution to cumulative effects would be measurable.

Alternative C

Alternative C includes 23 acres of thinning harvest in potential fall/migratory habitat within 6 miles of the Big springs cave. Effects for Alternative C would be similar to those identified in Alternative B.

Figure 3. Lower Clover area in relation to VBEB area of influence.



Fall /Migratory Habitat (movement back toward hibernacula)

Virginia big-eared bat move readily from one roost to another, but they probably do not migrate long distances (Barbour and Davis 1969). They have been documented foraging in a wide variety of habitats, both forested and open (USFS 2001 and references therein).

Fall/Migratory Habitat in and around the MNF and Lower Clover Area

Virginia big-eared bat appear to move readily from summer roost caves to other caves for winter hibernacula. Late summer telemetry studies (9August -21August) indicate that Virginia big-eared bat on the MNF are using similar habitats for foraging as documented for early summer with the exception that agricultural fields (corn and possibly soy beans) were used during this session and not earlier (Stihler, 1999). Fall foraging data on the MNF is limited. It is possible that the few documented bats moving back to Big Springs cave for hibernation may fall forage within the Lower Clover area.

Direct, Indirect and Cumulative Effects to Fall/Migratory habitat

Alternative A – No Action

With Alternative A, no areas and/or potential habitat will be disturbed or thinned. Usual road maintenance, wildlife opening mowing and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no direct, indirect or cumulative effect on Virginia big-eared bat fall/migratory habitat.

Alternative B – Proposed Action

Alternative B will involve 23 acres of regeneration harvest within the 6-mile radius Virginia big-eared bat foraging area surrounding Big Springs Cave. Virginia big-eared bats do not use trees for daytime roosting, they return to the cave during the day so there is no vulnerability of harm or potential for take from harvesting or other disturbances that could occur within the Lower Clover project area.

Alternative B will involve 23 acres of regeneration harvest within the 6-mile radius Virginia big-eared bat foraging area surrounding Big springs cave. Virginia big-eared bats do not use Big springs cave during summer, however the bats that do hibernate move from Big springs to another location in the spring and return in the fall. It is possible that these bats may forage several nights prior to moving into the cave for winter. However, they do not use trees for daytime roosting so there is no vulnerability of harm or potential for take from harvesting or other disturbances that could occur within the Lower Clover project area during fall swarming or migration back to hibernacula.

Indirectly, the harvest could have a beneficial effect on fall/migratory habitat by increasing habitat diversity. Currently about 93 percent of the National Forest land in the foraging radius of Big Springs Cave is forest over 30 years old. Gap analysis data (Strager and Yuill 2002) show that for all ownerships, the Big Springs Cave foraging radius is about 90 percent forested. Temporary openings created by regeneration harvest will increase diversity of the habitat, although any beneficial effect will be exceedingly small since it involves only 0.03 percent of the 72,382 acres of land in the 6-mile radius foraging area.

Current conditions integrate the effects of past and present activities; evaluation of cumulative impacts requires consideration of reasonably foreseeable future activities as well. On National Forest land (68 percent of the foraging circle); potential future actions include thinning and regeneration harvests to benefit the Indiana bat and to create age class diversity. Activities are also likely to include creation and maintenance of wildlife openings and water sources. Large areas of National Forest land in the foraging circle are in a designated wilderness area or remote backcountry areas where little or no management occurs. Natural succession and disturbance events will control habitat conditions in these areas. On private land within the foraging circle, forest management is likely to continue to be the dominant land use, with scattered agricultural and residential development. The proposed action will make a very small contribution to this general trend toward increasing habitat diversity. The contribution of the proposed action to cumulative effects would disappear when the tree canopy closes in about 15 to 20 years.

Forest wide, the majority of Virginia big-eared bat foraging habitat is on private lands, and is in mixed habitats consisting of forests, pastures, and other agricultural uses. This is providing a variety of foraging opportunities for this species. Most activities would have a somewhat beneficial effect on Virginia big-eared bat by adding to that diversity of habitat (i.e. travel corridors). Maintaining habitat diversity would have a positive effect. Forest Service activities such as prescribed burning, Timber sale improvements, and wildlife habitat improvements produce positive effects for Virginia big-eared bat by diversifying habitat, but are done in such small amounts within their foraging range that there is little measurable

effect. The contribution of the proposed action to cumulative effects at the forest wide scale is not measurable.

Alternative C

Alternative C includes 23 acres of commercial thinning in potential fall/migratory habitat within 6 miles of the Big Springs Cave hibernacula. Because the bats return to the cave during the day when harvest activities would occur, there would be no potential for take. Thinning would cause a temporary reduction of canopy cover that would contribute to beneficial habitat diversity. However, the area to be thinned is only 0.03 percent of the Big Springs Cave fall/migratory habitat circle (72,382 acres), so any effects would be extremely small. The canopy would close within a few years, so the time period within which Alternative C could contribute to cumulative effects would be very short. Thinning might contribute to the beneficial effects of future activities that create habitat diversity within the foraging circle. However, because of the small acreage involved and the short duration of the effects of thinning, it is likely that any contribution to cumulative effects would not be measurable.

Areas of influence for Virginia big-eared bats and its relationship with Lower Clover project areas are displayed below.

Areas of Influence:	Rx	OA	Unit of measure	Is this habitat Present within Lower Clover	Will this habitat be affected by Alt. A project activities?	Will this habitat be affected by Alt. B project activities?	Will this habitat be affected by Alt. C project activities?
Identified summer colonies	8.0	837	2 mile radius	No	No	No	No
Hibernacula	8.0	837	200' around hibernacula entrance	No	No	No	No
Corridors	8.0	837	330' wide area connecting cave entrance to foraging area	yes	No	No direct or indirect effect from regeneration or thinning harvests or road construction or reconstruction Activity.	No direct effect from thinning harvests or road construction or reconstruction Activities. Indirectly, effects of thinning would be minimal and road reconstruction or reconstruction may be beneficial in the short term.
Foraging/roosting area	3.0 *	13.006*	6 mile radius around cave entrance	yes	No	No direct or indirect effect from regeneration or thinning harvests or road construction or reconstruction activities.	No direct effect from thinning harvests or road construction or reconstruction activities. Indirectly, effects of thinning would be minimal and road reconstruction or reconstruction may be beneficial in the short term.

*specific to Lower Clover only

Determination: Implementation of Alternative A will have “No Affect” on Virginia big-eared bat individuals or habitat within Lower Clover analysis area. A No Effect determination is made for designated critical habitat for Virginia big-eared bat.

Implementation of Alternatives B, or C “May effect, Not Likely to Adversely Effect” Virginia big-eared bat individuals or habitat within Lower Clover analysis area.

Indiana bat

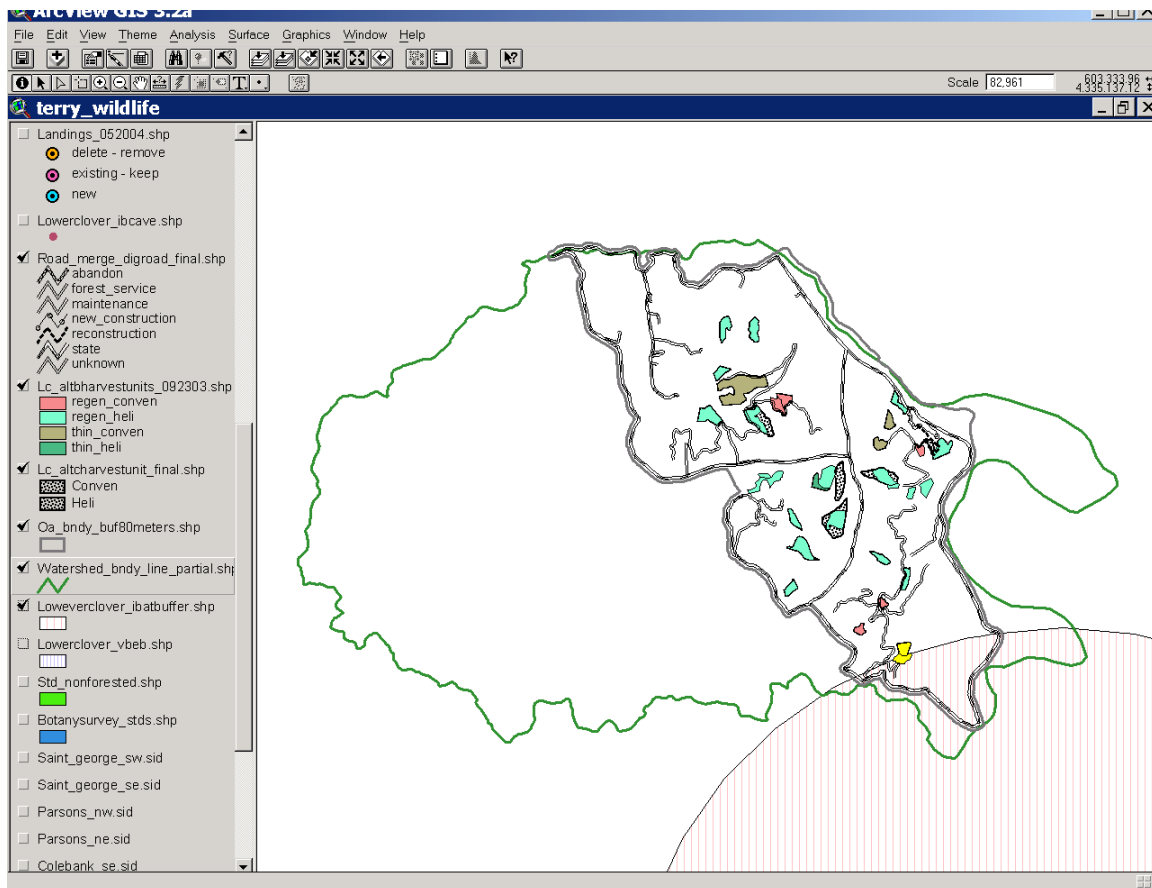
The Indiana bat is distributed throughout eastern US, from Oklahoma, Iowa, and Wisconsin, east to Vermont and south to northwestern Florida (Romme et al. 1995). During winter, Indiana bats restrict themselves primarily to karst areas of east-central U.S. During summer, Indiana bats forage nightly for terrestrial moths and aquatic insects in riparian as well as upland forests.

The area of influence for Indiana bats is recognized as four distinct areas;

1. hibernacula (200’ radius);
2. maternity sites (2 mile radius);
3. primary range (primary foraging, summer roosting and fall swarming – 5 mile radius);
4. key areas (150 acres within 5 mile radius).

Hibernacula, maternity sites, and key areas will be managed under MP 8.0 and Zoological Area standards for Opportunity Area 838. Primary range will be managed under MP 6.3.

Figure 4. Lower Clover area in relation to Indiana bat area of influence.



Hibernacula

Indiana bats typically hibernate predominately in karst caves from October - April, depending upon local weather conditions. In the last decade, WV has seen a 45% increase in the number of hibernating Indiana bats (Wallace pers. comm. 1999) with total populations across WV at approximately 10,658 (Stihler and Wallace 1999).

Hibernacula (200' radius around cave entrances) is included within the area of influence for Indiana bat and managed under MP 8.0 and OA 838.

Hibernacula Habitat in and around the MNF and Lower Clover Area

In most years, approximately 26 West Virginia caves provide adequate Indiana bat winter hibernacula. Eleven hibernacula are within the MNF Proclamation Boundary, but only three (Big Springs Cave, Cave Hollow/Arbogast Cave, and Two-Lick Run Cave) have all or most of their entrances on MNF land. Hellhole cave, a privately owned cave in Pendleton County, is the only WV cave currently designated Critical Indiana bat habitat (Priority II) (USFWS 1996); it lies within the MNF proclamation boundary, but on private land approximately one mile from national forest land. Big Springs Cave (located approximately 4 miles from Lower Clover analysis area) serves as an Indiana bat hibernacula and is gated and closed to entry from September 1 to May 15. The most recent 2003 winter cave survey tallied 199 Indiana bats using Big Springs cave. This is a decline from 240 bats counted during the 2000 winter survey. Cave Hollow/Arbogast is gated with a year-round closure order and Two Lick cave

is signed and closed from September 1 to May 15. Refer to Appendix A, LOO for cave distances to Lower Clover area.

Direct, Indirect and Cumulative Effects to Hibernacula habitat

Any Activity proposed in Lower Clover analysis area would have no direct, indirect or cumulative affect on Big springs cave or any bats occupying that cave. Winter hibernacula habitat for Indiana bats is not analyzed further.

Summer Maternity Sites and Bachelor Sites

Female Indiana bats depart hibernation caves before males and arrive at summer maternity roosts in mid-May. Females form small maternity colonies containing up to 100 adults and their young. A single offspring, born during June, is raised at this maternity site usually under loose tree bark (USDA FS 2001). Maternity colonies typically use multiple roosts – at least 1 "primary" roost used by most bats during summer, and a number of "secondary" roosts used intermittently and by fewer bats. Thus, some Indiana bat maternity colonies may use more than a dozen roosts (USFWS 1996).

Romme et al. (1995) presents five variables that determine roosting habitat (percent canopy cover, mean diameter of over-story trees, density of potential live roost trees >8.7 inches DBH, density of snags >8.7 inches DBH, and percent understory [or understory crown density]) and describes the values of these variables which make the most suitable Indiana bat habitat. The optimal canopy cover for roosting Indiana bats is 60-80%. The higher the mean diameter of over-story trees, the more suitable the area is for roosting. The abundance of snags indicates current roosting value, so the more snags the better. The percent of understory cover indicates how accessible the roost trees are to the bats, the lower percentage, the better access to roost sites. Tree structure, specifically the availability of exfoliating bark with roost space underneath, is a critical characteristic for roost trees.

Maternity and bachelor sites are included within the area of influence for Indiana bat and managed under MP 8.0 and OA 838.

Identified Summer Maternity and Bachelor Habitat on the MNF and Lower Clover Area

West Virginia is within Indiana bat's eastern maternity range, but not within the core range. Prior to summer 2003 maternity colonies in WV had not been confirmed. Despite extensive summer surveys throughout West Virginia, especially in and around the MNF (BA Appendix 6), Indiana bat maternity roosts had not been found. Presumably, reproductive female bats are more constrained by thermoregulatory and energy needs than are males and nonreproductive females (Cryan 2000). MNF nighttime temperatures on most of the Forest are thought to be too cold to support maternity colonies (Stihler and Tolin, pers. comm. 1999).

Surveys conducted in 2003 did capture two lactating female Indiana bats in the southern part of the State. These two lactating females were the first to be captured in the state and are strong indicators of the presence of maternity roost sites.

Additionally, in survey efforts conducted in 2004 on the MNF, a confirmed maternity colony was located in the Lower Glady area. This capture is approximately 12 miles from Lower Clover analysis area. A radio transmitter was placed on the female bat and roosting habits were documented through monitoring efforts until the transmitter fell off the bat. Evening emergence counts were conducted at two identified roost sites. Both roost sites were either on or very near Forest Service lands and within ½ mile from the original capture site. Protections as provided in the *MNF Forest Plan* have been implemented with regard to this maternity roost site. Generally, the area in which this maternity colony is located is a mixture of forested areas, forest edges, and early successional areas. The maternity roost tree is located in an area that has experienced recent (\approx 5 years) timber harvest and has been burnt over creating a generous number of larger snags with sloughing bark.

A total of 15 mist net sites have been surveyed within the Clover Run watershed. Five of these sites are within the Lower Clover analysis area. There were a total of 183 bats captured during efforts in 1997 and 2003. Bats captured included *Eptesicus fuscus*, *Lasiurus borealis*, *Myotis lucifugus*, *Myotis septentrionalis* and *Pipistrellus subflavus*. There were also several unknown *Myotis* species captured and two unknown species. Specific data from these surveys can be found in Appendix B.

Direct, Indirect and Cumulative Effects to Summer Maternity Sites and Bachelor Habitat

The July 2004 maternity colony located in Lower Glady area is nested within the existing Area of Influence (5-mile primary range) for the Cave Hollow-Arbogast cave. This area does not overlap the Area of Influence for Big springs cave. Lower Clover analysis area lies approximately 12 miles from the July 2004 maternity colony.

Any Activity proposed in Lower Clover analysis area would have no direct, indirect or cumulative affect on the known maternity site. Summer maternity sites and bachelor habitat for Indiana bats is not analyzed further.

Summer Foraging and Roosting Habitat

Indiana bats forage nightly for terrestrial moths and aquatic insects, primarily in upland forests and riparian woodlands usually between May and October. Prey selection reflects the available foraging environment (Romme et al. 1995). While summer needs are not well understood, Indiana bats prefer to forage within upper forest canopy layers where over-story canopy cover ranges from 50-70% (Romme et al. 1995). Indiana bats are known to forage along forest edges, in early successional areas, and along strips of trees extending into more open habitat, but drinking water must be available near foraging areas (Romme et. al. 1995). Large open pastures or croplands, large areas with <10% canopy cover, and stands with large unbroken expanses of young (2-5-in dbh), even-aged forests are avoided or are rarely used for Indiana bat foraging (Romme et al. 1995).

Summer foraging and roosting is included within the area of influence for Indiana bat and managed under MP 6.3.

Summer Foraging in and around the MNF and Lower Clover Area

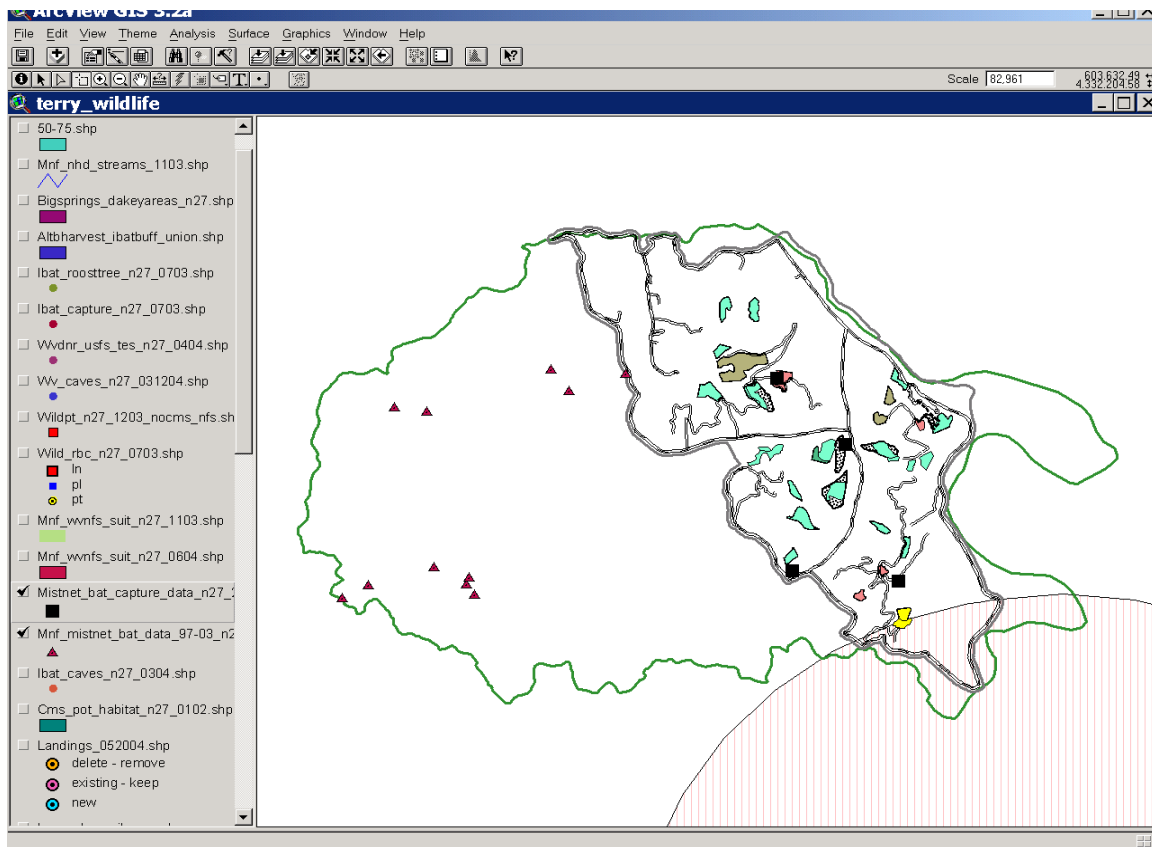
Potential roosting habitat, both maternity and non-maternity, is widely available as the MNF is 96% forested (872,800 acres) with 63% of that (549,860 acres) being >60 years old. Based upon a review of available forest data, a large amount of the Forest is above optimal canopy closure for Indiana bat foraging habitat, but the majority of forested conditions make most of the Forest potential habitat. Trees exhibiting roosting characteristics, such as shagbark and bitternut hickory, red and white oak, sugar maple, white and green ash, and sassafras, are plentiful throughout the Forest.

Stihler reported the first record of summer Indiana bat in WV, when he surveyed bats at Big Springs Cave several times a month from June through November, 1995. He documented male Indiana bat captures at this hibernacula beginning in June, and female's starting in mid-August. A total of 69 Indiana bats were captured during the 1995 study. Stihler (1998) found that Indiana bat males foraged and day roosted near hibernacula (within 3.5 miles, or 5.6 km) throughout summer. This information has been used to determine the primary range requirements needed around hibernacula. The Monongahela provides approximately 203,235 acres of habitat (28% of Forest) within these 5-mile zones. Another 513,247 acres are privately owned.

Since the 1995 surveys, additional male Indiana bats have been found during summer mist netting surveys. There have been nine male Indiana bats captured during summer surveys on the Fernow Experimental Forest from 2000-2003. These bats were tagged and observed until radio transmitters were no longer viable.

Five areas within Lower Clover project area were surveyed during July 2003. Ten additional areas within the Clover Run watershed were surveyed in 1997. There were a total of 183 bats captured during efforts in 1997 and 2003. Bats captured included *Eptesicus fuscus*, *Lasiurus borealis*, *Myotis lucifugus*, *Myotis septentrionalis* and *Pipistrellus subflavus*. There were also several unknown *Myotis* species captured and two unknown species. Specific data from these surveys can be found in Appendix B. Figure 5 identifies survey locations both within the project area and within the Clover Run watershed. Appendix B includes specific bat capture data for this area.

Figure 5. Mist net surveys completed on Lower Clover area.



Direct and Indirect Effects to Summer Foraging and Roosting Habitat

Alternative A – No Action

With Alternative A, no areas and/or potential habitat will be disturbed or thinned. Usual road maintenance, wildlife opening mowing and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no direct, indirect or cumulative effect on Indiana bat summer foraging and roosting habitat or areas within the Lower Clover analysis area.

Alternative B – Proposed Action

As originally proposed, Alternative B included 10 acres of regeneration harvest within the 5-mile radius foraging habitat (MP 6.3) around Big Springs Cave. This area is identified in yellow within the area of influence in Figure 5 above. The Forest Plan T&E Amendment was signed after the original Purpose and Need for Lower Clover analysis was written. The amendment designated MP 6.3 areas around known hibernacula, and identified standards and guidelines specific to Indiana bat habitat management. Because the purpose of MP 6.3 was not included in the original Lower Clover purpose and need, the proposed 10-acre harvest unit now within MP 6.3 has been recommended for withdrawal or modification from Alternative B (2 September 2004 memorandum from Jeffery J. Hammes, Cheat-Potomac District Ranger). The remaining activities proposed in Alternative B will not occur within MP 6.3 and will not affect identified summer foraging and roosting habitat around Big Springs cave.

There are direct effects from the remaining activities proposed outside the identified summer foraging and roosting habitat for Big springs cave. Any tree removal during the non-hibernation period (April 1 – November 14) may result in mortality (take) of an individual roosting Indiana bat if a tree containing that bat is removed intentionally or felled accidentally. If a bat using the said felled and removed roost tree is not killed by the felling action, the roosting bat would be forced to find an alternative roost tree, potentially expending a significant amount of energy and making the bat vulnerable to predation. This action would result in harm or harassment of the individual bat. This also constitutes take. Therefore activities may affect, likely to adversely affect Indiana bat individuals. All proposed activities fall within the scale and scope addressed in the Biological Opinion and within the level of take identified in the Incidental Take permit.

Alternative C

With Alternative C, originally approximately 0.20 acres of thinning harvest were mapped for harvest within the 5-mile foraging habitat of Big Springs Cave (MP 6.3). This 0.20 acres is mapped as a narrow sliver using GIS techniques and exceed a threshold of accuracy identified by National Map Accuracy Standards (Lammie 2004, pers. Comm.). This area will be dropped from harvest activity. Because activities will not occur within MP 6.3, Alternative C will not affect identified summer foraging and roosting habitat around Big springs cave. Direct effects of activities proposed outside the identified summer foraging and roosting habitat is consistent with those described for Alternative B.

Fall/ Swarming Habitat

Indiana bats begin swarming as early as August and through October or November, depending upon local weather conditions. Swarming entails congregating around and flying into and out of cave entrances from dusk to dawn, prior to hibernation (Kiser and Elliot 1996). This is a biologically important period because during this time bats mate and replenish fat reserves prior to hibernation (USFWS 1983).

Fall swarming habitat is included within the primary range for Indiana bat and managed under MP 6.3

Fall Swarming/Migratory Habitat in and around the MNF and Lower Clover Area

The MNF provides approximately 252,000 acres of swarming habitat within 5 miles of known hibernacula. Of these acres approximately 56,000 acres are in Wilderness (MP 5.0), semi-primitive, largely natural, undisturbed areas (MP 6.2), and zoological areas (MP 8.0) that provide protections to the Indiana bat. Approximately 583,000 acres of private lands fall within five miles of known hibernacula. Indiana bats may also fall swarm around cave entrances not necessarily used as hibernacula. The closest non-hibernacula caves to the project area are Limestone Mountain cave (3 miles), Waybright cave (3.5 miles), Stillhouse and Ellick caves (4 miles) and Maxwell Run and Otter Creek caves (5 miles).

Direct and Indirect Effects to Fall Swarming/Migratory Habitat

Alternative A – No Action

With Alternative A, no areas and/or potential habitat will be disturbed or thinned. Usual road maintenance, wildlife opening mowing and firewood gathering activities would continue. Therefore, implementation of Alternative A would have no effect on Indiana bat fall swarming or migratory habitat around Big springs cave or areas within the Lower Clover analysis area.

Alternative B – Proposed Action

Because the areas within the 5-mile radius of Big Springs Cave (MP 6.3) have been dropped from this proposed action, this fall swarming/migratory habitat will not be affected.

There are direct effects from the remaining activities proposed outside the identified fall swarming or migratory habitat for Big springs cave. Any tree removal during the non-hibernation period (April 1 – November 14) may result in mortality (take) of an individual roosting Indiana bat if a tree containing that bat is removed intentionally or felled accidentally. If a bat using the said felled and removed roost tree is not killed by the felling action, the roosting bat would be forced to find an alternative roost tree, potentially expending a significant amount of energy and making the bat vulnerable to predation. This action would result in harm or harassment of the individual bat. This also constitutes take. Therefore activities may affect, likely to adversely affect Indiana bat individuals. All proposed activities fall within the scale and scope addressed in the Biological Opinion and within the level of take identified in the Incidental Take permit.

Alternative C

With Alternative C, the approximate 0.20 acres of thinning harvest originally mapped will be dropped from harvest. This 0.20 acres was located within the 5-mile fall swarming/migratory habitat of Big Springs Cave. This acreage is negligible and will be dropped when the unit is marked on the ground, therefore, no identified fall swarming/migratory habitat will be affected. Because activities will not occur within MP 6.3, Alternative C will not affect identified fall swarming or migratory habitat around Big springs cave. Direct effects of activities proposed outside the identified fall swarming/migratory habitat is consistent with those described for Alternative B.

Key Area Habitat

Ideally, this single area should include 20 acres of old growth forest or potential old growth and an additional 130 acres of mature forest. As appropriate, it should include the area around the cave entrance, area above the cave entrance, foraging corridor and ridge tops/side slopes around the cave when possible.

Key area habitat is included within the primary range for Indiana bat and managed under MP 8.0 and OA 838.

Key Area Habitat in and around the MNF and Lower Clover Area

A key area has been identified around Big Springs cave. This area is outside the Lower Clover analysis area. There are no key areas identified within the project area. Key areas

have also been identified for Cave Hollow/Arbogast and Coal Run cave; however they are not within the Lower Clover area.

Direct and Indirect Effects to Key Area Habitat

Any Activity proposed in Lower Clover analysis area would have no direct, indirect or cumulative affect on the key area identified for Big Springs cave. Indiana bat key habitat around Big springs cave is not analyzed further.

Areas of influence for Indiana bats and relationship with Lower Clover project areas are displayed in the table below.

Areas of Influence:	Rx	OA	Unit of measure	Is this habitat Present within Lower Clover	Will this habitat be affected by Alt. A project activities?	Will this habitat be affected by Alt. B project activities?	Will this habitat be affected by Alt. C project activities?
Hibernacula	8.0	838	200' around hibernacula entrance	No	No	No	No
Maternity Sites	8.0	838	2 mile radius	No	No	No	No
Primary Range: Primary foraging Summer roosting Fall swarming	6.3		5 mile radius around cave entrance	No	No	No	No
Key areas	8.0	838	150 acres of oldest habitat closest to hibernacula	No	No	No	No

Determination: Implementation of Alternative A will have “No Affect” on Indiana bat individuals or habitat within Lower Clover analysis area. A No Effect determination is made for designated critical habitat for Indiana bat.

Determination: Implementation of Alternative B or C will have a “May Affect, Likely to Adversely Affect” determination on Indiana bat individuals or habitat for projects within Lower Clover analysis area, however there will be no effects beyond those previously disclosed and addressed in the *Revised Biological Assessment* (USDA 2001) and *Biological Opinion* (USFWS 2002). A No Effect is made for designated critical habitat for Indiana bat.

As a result of this determination, the Forest requests initiation of formal consultation on the Indiana bat (as required under ESA) under the tiering process described in the *Biological Opinion for the proposed Threatened and Endangered Species Plan Amendment* (Term and Condition #11).

Summary of Determinations

In summary, based on the above affects analysis for species and habitat types, it is my professional opinion that implementing Alternative A of the Lower Clover Analysis will

- Have “no effect” on: West Virginia northern flying squirrel, bald eagle, Cheat Mountain salamander, shale barren rock cress, Virginia spirea, small whorled pogonia, running buffalo clover, Virginia big-eared bat and Indiana bat.

In summary, based on the above affects analysis for species and habitat types, it is my professional opinion that implementing Alternatives B and C of the Lower Clover Analysis will

- Have “No effect” on: West Virginia northern flying squirrel, bald eagle, Cheat Mountain salamander, shale barren rock cress and Virginia spirea.
- Have a “May affect, not likely to adversely affect” on: Small whorled pogonia, running buffalo clover and Virginia Big-eared bat.
- Have a “May affect, likely to adversely affect” Indiana bat.

All alternatives will have no effects beyond those previously disclosed and addressed in the Revised Biological Assessment (USFS 2001) and Biological Opinion (USFWS 2002). The anticipated effects from the proposed project are similar to those anticipated in the programmatic BO (USFWS 2002).

If any federally listed endangered or threatened species are found during project design or implementation, activities within that area will cease until additional consultation with USFWS has been concluded.

MITIGATION

- Revegetation of temporary roads should be certified weed-free and seed mix should provide wildlife value.
- Retain all shagbark hickory trees in cutting units except where public safety concerns exist.
- Monitor snag retention in cutting units. If an average of less than six snags/acre with 9” dbh or greater exists, manually create additional snags.

Prepared by: _____
/s/Theresa A. Evans
NEPA/Wildlife Biologist

_____ Date

Prepared by: _____
/s/Kent Karriker
NEPA/Wildlife Biologist

_____ Date

Reviewed by: _____
/s/Dan Arling
Forest Wildlife Biologist

_____ Date

Reviewed by: _____
/s/Mike Owen
Forest Fisheries Biologist

_____ Date

Reviewed by: _____
/s/ Melissa Thomas-VanGundy
Forest Ecologist/Botanist

_____ Date

Lower Clover Biological Assessment
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